

# PREVALENCE OF THE GOLDEN PROPORTION ON DENTAL STUDENTS

290



46<sup>th</sup> Meeting of the Continental European Division of the International Association for Dental Research with the Scandinavian Division (NOF)

A.R. Barata, A.C. Azul, L. Proença, J.J. Mendes

Centro de Investigação Interdisciplinar Egas Moniz, Instituto Superior de Ciências da Saúde Egas Moniz, Caparica, Portugal



## Introduction:

Concerns about aesthetics have been increasing at all levels. In particular, dental and facial aesthetics seem to have, a decisive and high importance for a quality of life. Dental aesthetics is influenced by many factors that determine the harmony smile, highlighting the size, shape and distribution of anterior upper teeth. Over history, the standards of beauty have changed, varying between countries and regions, maintaining a denominator, the proportion. [1][2][3][4]

## Objective:

To evaluate the existence of golden proportion (GP) on dental students, its distribution by gender, and the level of satisfaction regarding their smile.

## Methods:

177 students from a Faculty of Dental Medicine were observed and surveys were applied to the participants after an informed consent and approval from the Ethical Committee. Inclusion criteria involved individuals without teeth crowding and/or diastema, nor restorations on the upper anterior teeth. For data recording, a Canon 650D camera was used and all photographs were taken in a standardized manner. (Fig.1) The measurement of the mesiodistal distance of all maxillary anterior teeth in a frontal view and the calculation of the GP were digitally obtained. (Fig 2.) Inferential statistics analysis was performed at a 5% significance level. Paired samples Student's t-test was used to evaluate the differences between teeth. Independent samples Student's t-test was used to compare GP in relation to gender, previous orthodontic treatment and satisfaction regarding the smile. [5][6][7]

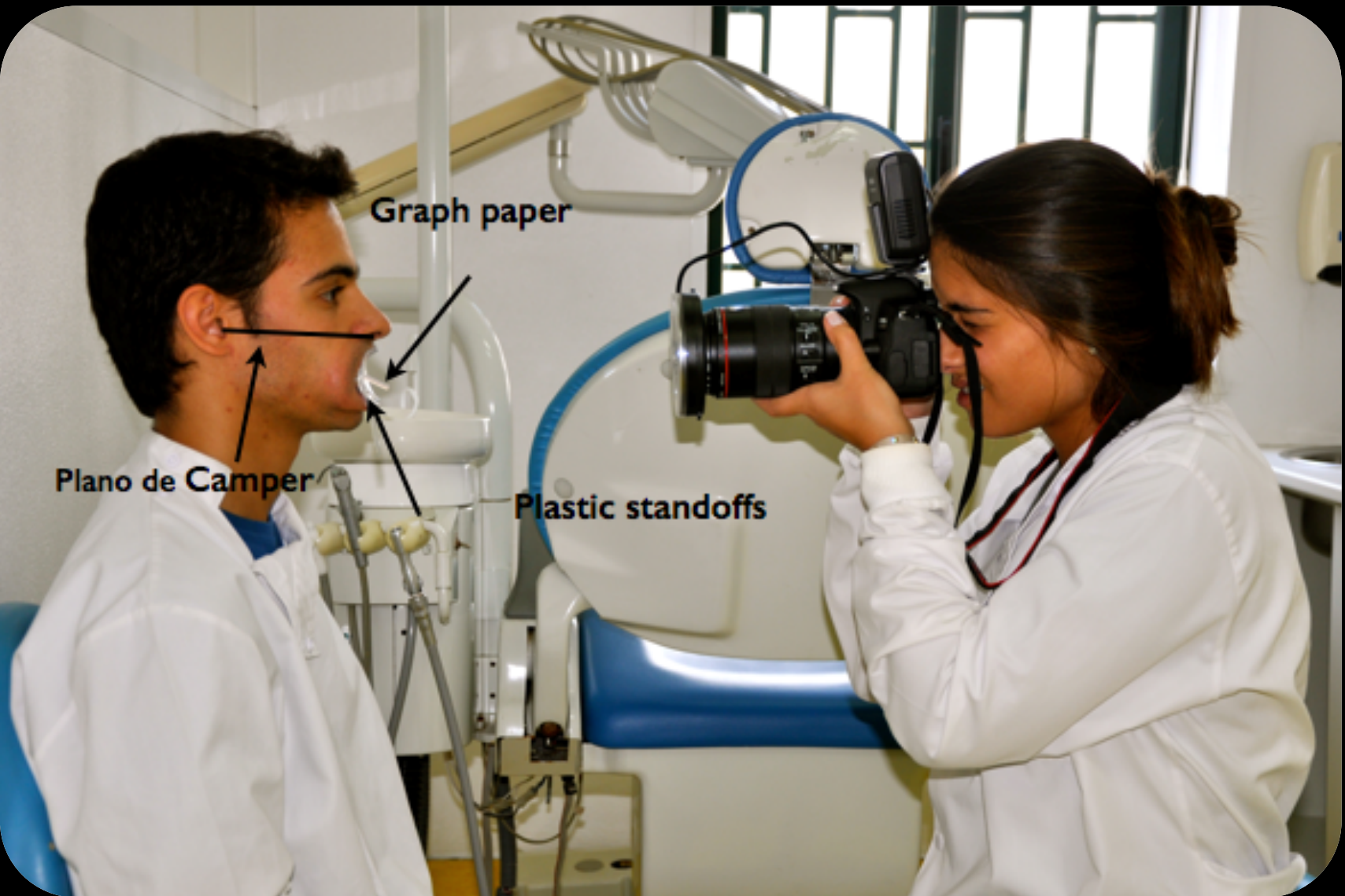


Fig 1 Illustrative photo of the photographic record

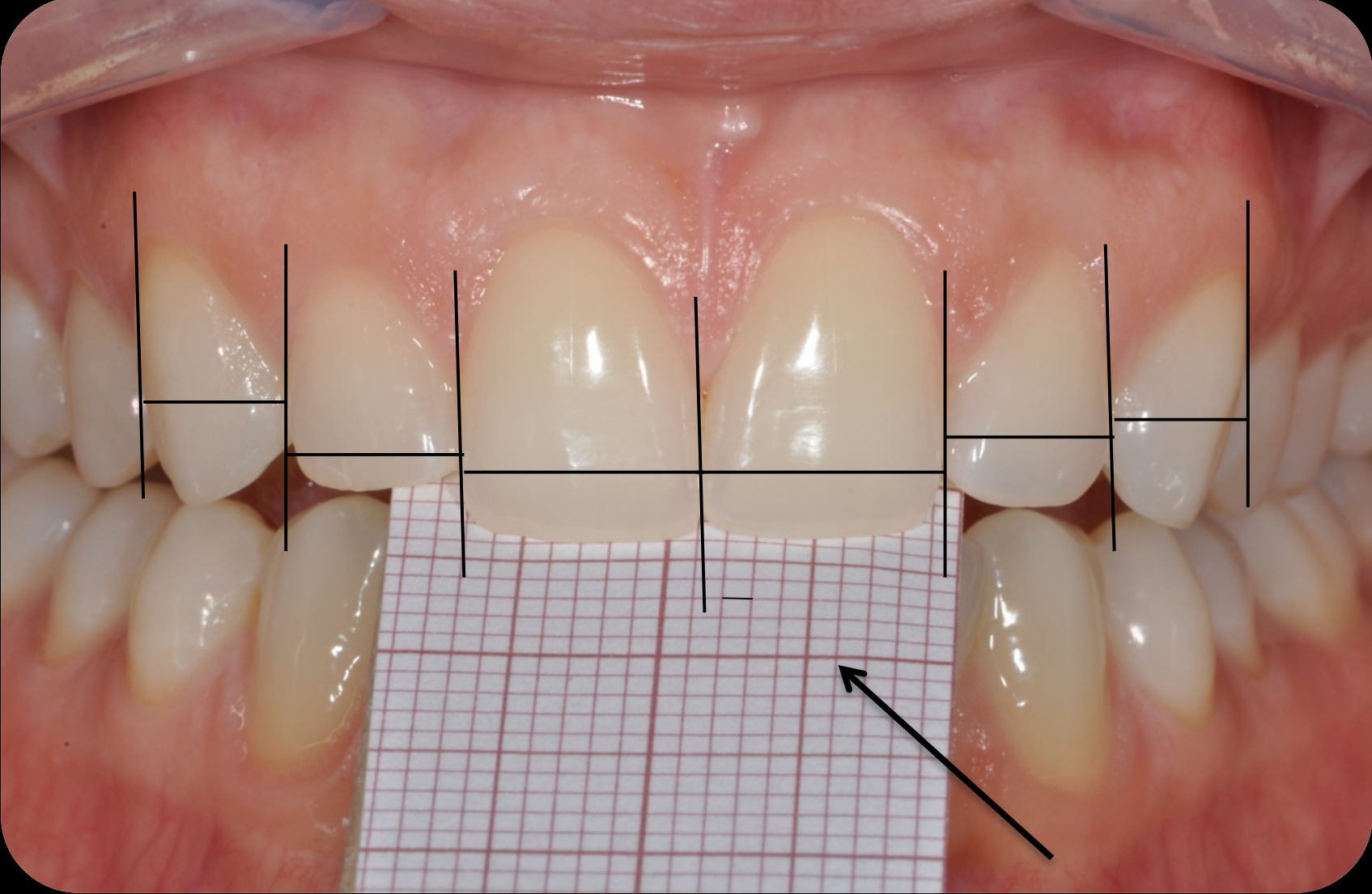


Fig 2 Union of the vertical lines corresponding to the distal mesio- distance of each tooth

## Results and Discussion:

The sample included 63 individuals with an average age of 22 years old

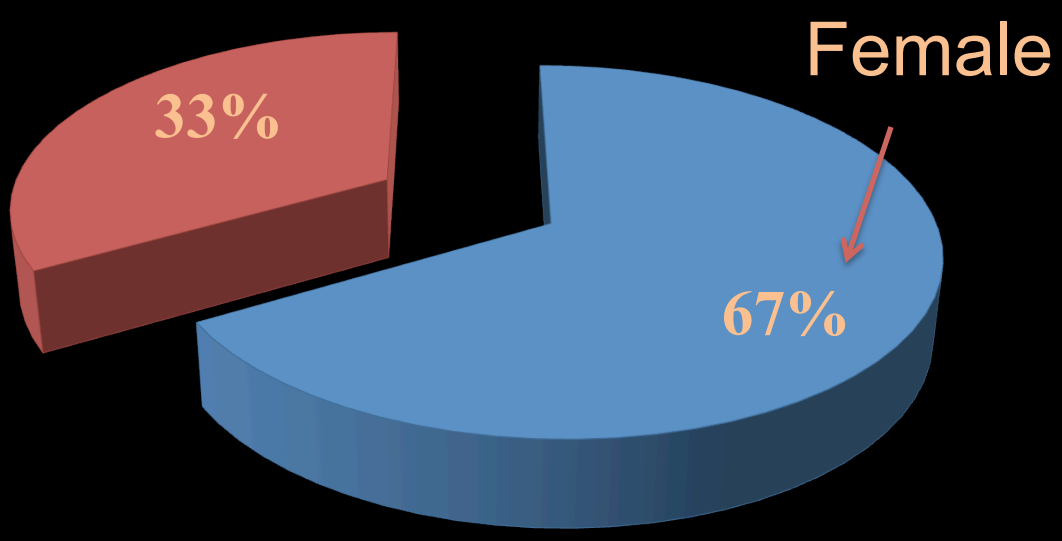


Fig 3. Distribution of gender

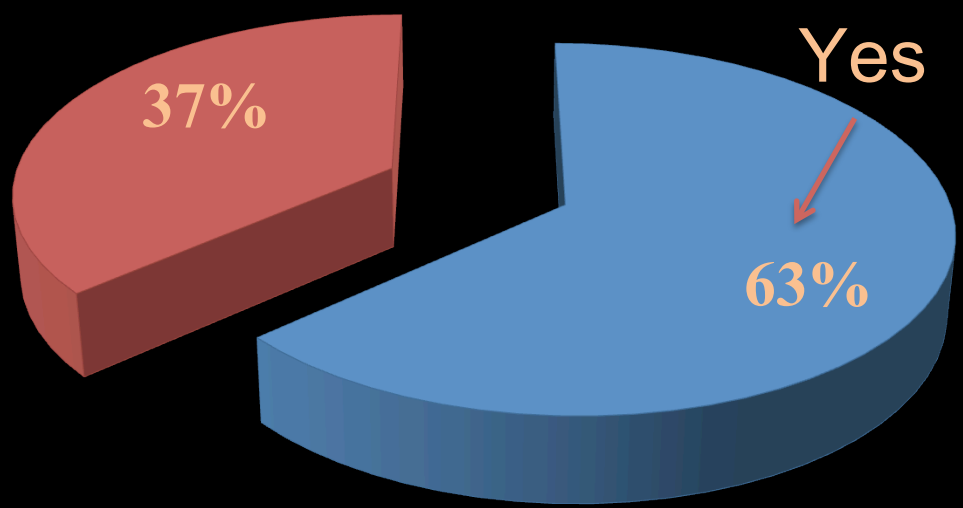


Fig 4. Distribution of the Smile satisfaction

- 79% of the individuals were submitted to orthodontic treatment and in the referred sample, 50,7% were satisfied with their smile
- The crowding and/or diastema, the colour and the gingival smile were identified as the main factors of dissatisfaction.
- For the ratio Lateral Incisor/Central Incisor (LI/CI), 32.3% showed a golden proportion between 12 and 11 and 41.9% between 22 and 21.
- For the ratio Lateral Incisor/C (LI/C) on both sides, there was no golden ratio

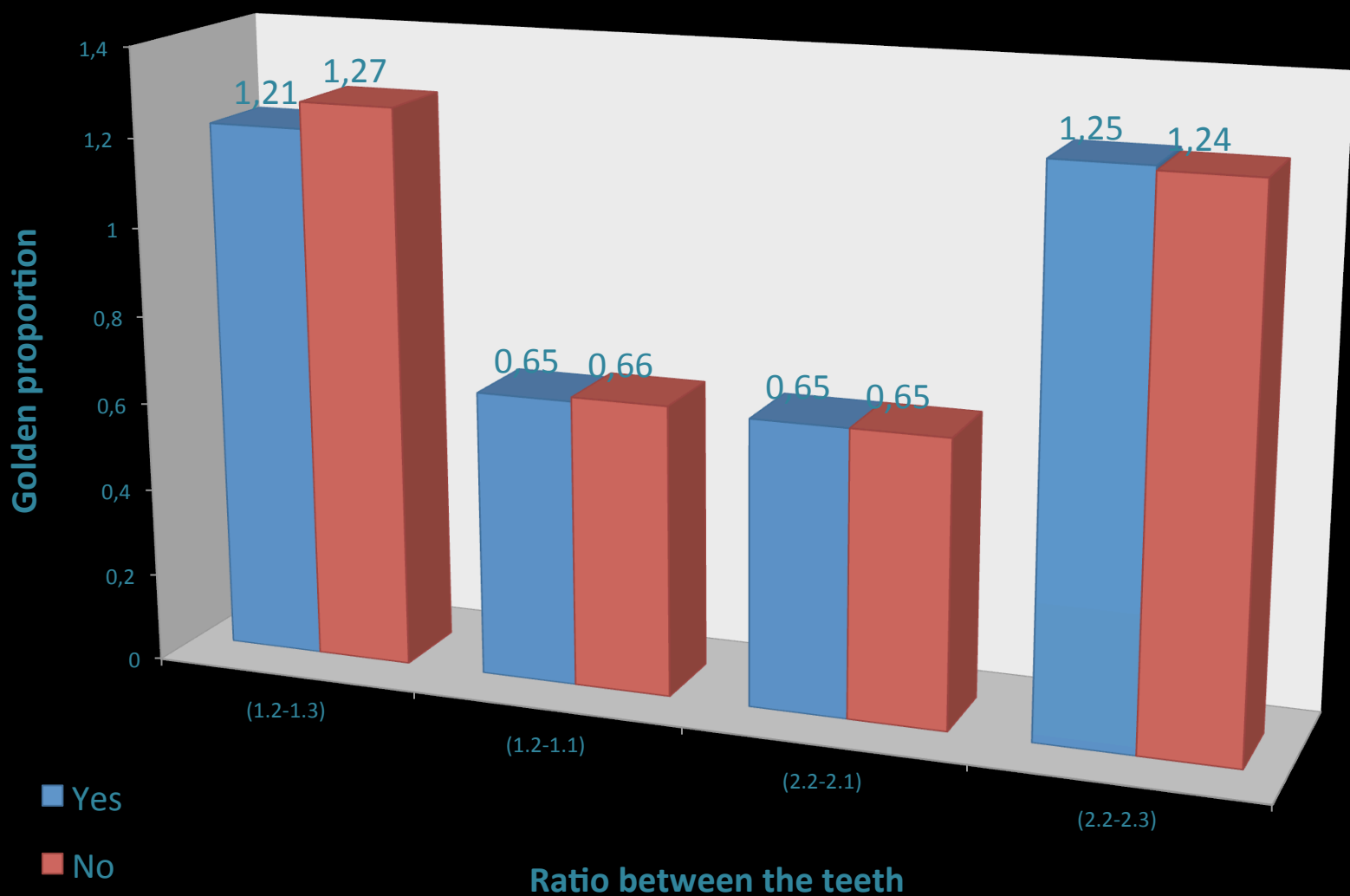


Fig 5. Golden proportions and smile satisfaction

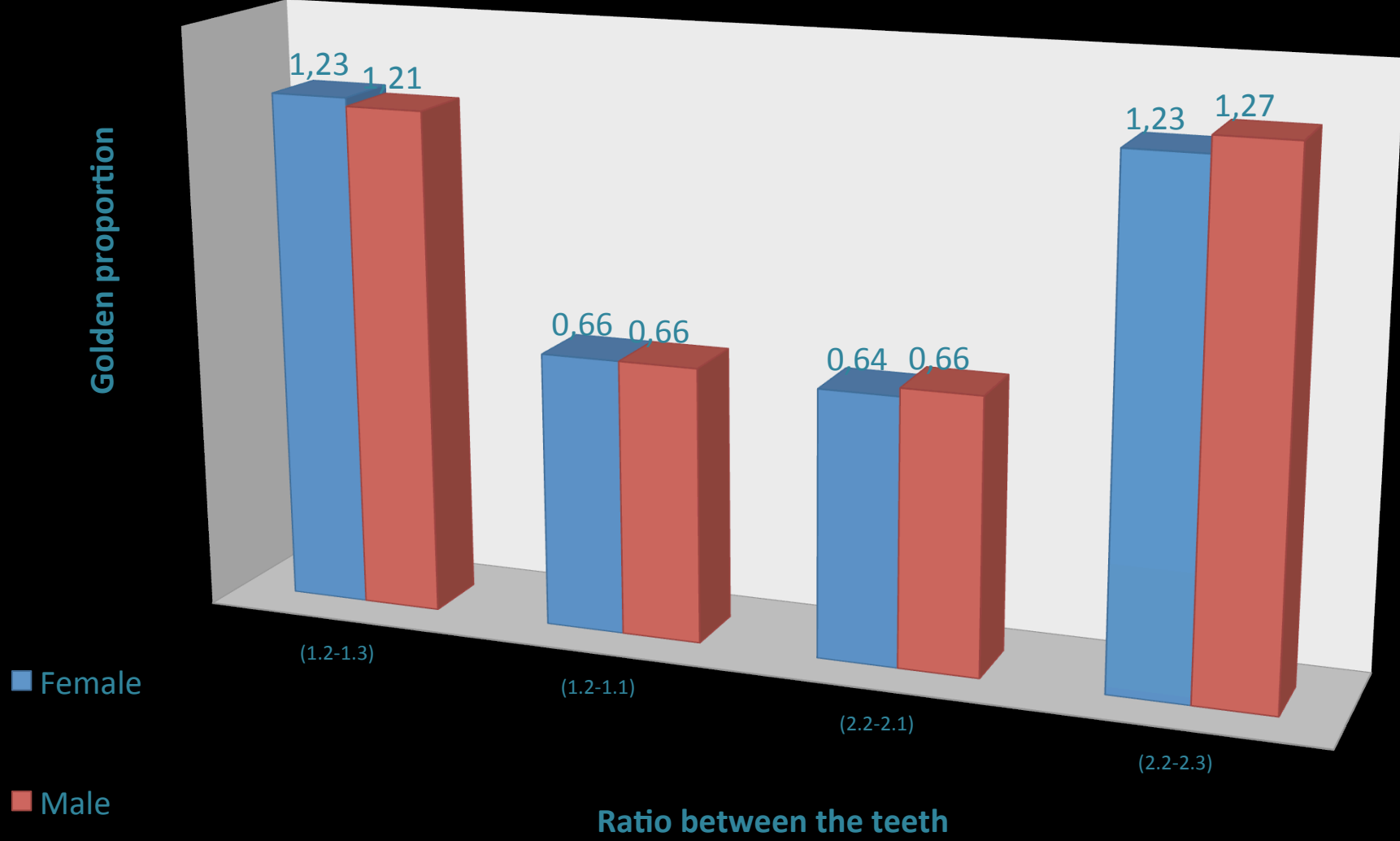


Fig 6. Golden proportions and gender

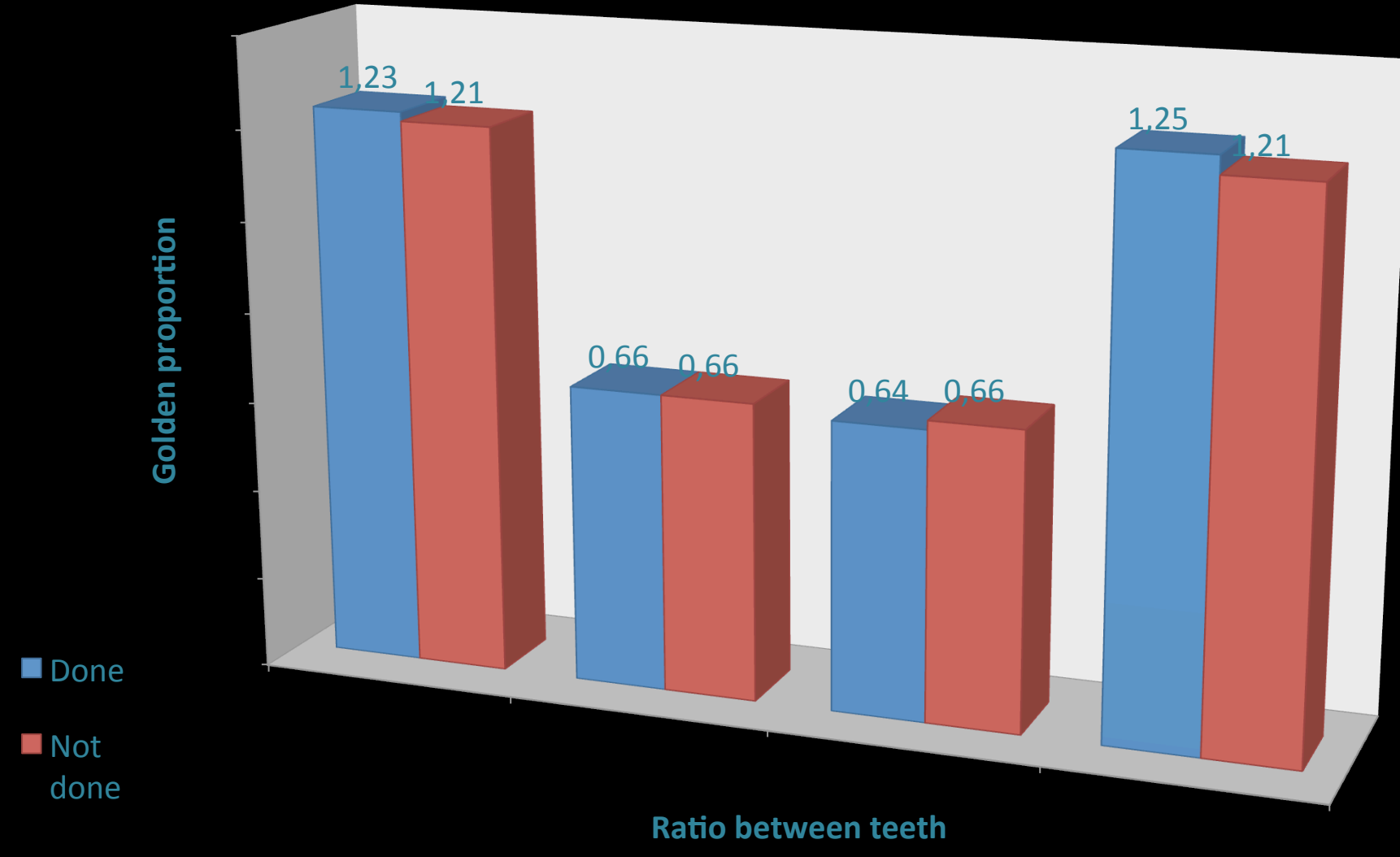


Fig 7. Golden proportions and orthodontic treatment

Concerning GP and smile satisfaction, GP and gender, GP and orthodontic treatment the differences were not statistically significant (Student t test for independent samples) ( $p > 0.05$ ) (Fig.5, Fig.6 and Fig.7)

## Comparison with other studies in the literature

	Golden Proportion IL - C	Golden Proportion IL - IC
Current Study	X	✓ (32,3%)
Preston., 1993	X	✓ (17%)
Mahshid <i>et al.</i> , 2004	✓ (3,6%)	✓ (20,2%)
Al-Marzok <i>et al.</i> , 2013	✓ (20,4%)	✓ (20,4%)

[6][8][9]

Kokich (1999) states that there are good examples of exceptional dentitions in nature. At the presente study, there are no cases of golden proportion simultaneously between IL / IC and IL / C, however if this a condition to consider them an "exceptional dentition", this study refutes this premise. [10]

## Conclusions:

Although there was no GP between LI/C on both sides, proportion was present between LI/CI. Gender and orthodontic treatment did not appear to be factors with an influence on the presence of the GP. Most of the individuals were satisfied with their smile.

## References:

[1] Springer, N., Chang, C., Fields, H., Beck, F., Firestone, A., Rosenstiel, S., e Christensen, J. (2011) "Smile esthetics from the layperson's perspective." Am J Orthod Dentofacial Orthop, 139 (1), pp. 91-101. doi: 10.1016/j.ajodo.2010.06.019.  
[2] Wolfart, S., Quaas, A.C., Freitag, S., Kropp, P., Gerber, W.D., e Kem, M. (2006). "Subjective and objective perception of upper incisors." J Oral Rehabil, 33(7), pp.489- 95. [3] Hasanreisoglu, U., Berksun, S., Aras, K., e Arslan, I. (2005). "An analysis of maxillary anterior teeth: facial and dental proportions." J Prosthet Dent, 94(6), pp. 530-8. [4] Goldstein, R. E., (1993) "Guest Editorial: Esthetic Dentistry A Health Service?," J Dent Res 72(641), pp. 641-642.[5] Magne, P., e Belser, U. (2002). Natural Oral Esthetics, in Magne, P., Belser, U. Bonded Porcelain Restorations in the Anterior Dentition: A Biomimetic Approach, (pp.57- 96). Quintessence Editor, Carol Stream, USA. [6] Mahshid, M., Khoshvaghti, A., Varshosaz, M., e Vallaei, N. (2004). Evaluation of "golden proportion" ividuals with an Esthetic Smile. J Esthet Restor Dent, 16(3), pp. 185-192. [7] Marson, F., Silva, R. (2009). Revista Dentística on line – ano 8, número 18, janeiro / março, ISSN 1518-4889 - http://www.ufsm.br/dentisticaonline. [8] Preston, J. D. (1993). "The golden proportion revisited." J Esthet Dent, 5(6), pp. 247- 251. [9] Al-Marzok, M.I., Majeed, K.R., Ibrahim, I.K. (2013). "Evaluation of maxillary anterior teeth and their relation to the golden proportion in Malaysian population." BMC Oral Health, 13(9). doi: 10.1186/1472-6831-13-9. [10] Kokich, V. O. (1999). "Comparing the perception of dentists and lay people to altered dental esthetics". J Esthet Dent, 11(6), pp.311-324.